

TITLE OF THE INVENTION

MAGNETOMECHANICAL SYSTEM FOR REDUCTION OF THE RECOIL OF A GUN.

CROSS-REFERENCE TO RELATED APPLICATIONS

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MAGNETOMECHANICAL SYSTEM FOR REDUCTION OF THE RECOIL OF A GUN.

BACKGROUND OF THE INVENTION

A magnetic-mechanical system for the recoil's reduction, which is developed in a gun upon firing. The gun, whereas it is a mechanical system and while a fired bullet runs the distance from the gun-barrel's chamber to the gun-barrel's muzzle, it acts as a reactive system like an internal combustion engine. Apart from the gun's recoil phenomenon which is caused of the instantaneous firing in the chamber because of the bullet's charge, the produced explosion gives to the gun's frame an instantaneous kinetic energy, annihilating any inertia phenomenon, which was prevailing in the reference system between the gun and the user before the explosion.

BACKGROUND ART

For the avoidance of the recoil phenomenon the current technology of portable guns like the semi-automatic pistols, automatic pistols, submachine-guns and/or other heavy weaponry, the recoil systems bring in most cases a recoil spring. Different technical solutions are used for the increase of the inertia of the reference system between the gun and the user, which nevertheless are restricted to small improvements in the present-case, like:

1. By the addition of a mercury pouch on the gun's front end, so as to cause vertical resultant, in order to increase the gun's inertia over the gun-barrel's recoil.
2. By the gas escape from blow holes of the gun-barrel's top with direction opposite of the gun's recoil direction upon shooting.

BRIEF SUMMARY OF THE INVENTION

The invention, which will be described, is referred to the creation of an absorption–reduction magnetomechanical system of this axial force, which causes the recoil. The

invention is based, on a magnet's (M) presence, which in cooperation with successive springs, of the same or different diameter, spring's coils or wire's of springs diameter's, controls the acceleration and the deceleration of the slide's reciprocating motion in a gun. Also by the mechanical only method, wherein one of the successive springs, having the same axial or another axial arrangement level and in succession with the pre-mentioned successive springs, takes part to the motions' process, with time lag. This happens because its edges do not abut from the beginning to reference points upon the gun, but only after the firing of each bullet in it. The result of all this function is the biggest possible control of the gun's recoil.

BRIEF DESCRIPTION OF THE DRAWINGS

List of parts :

(1) cylinder,
(2) spring,
(3) spring,
(4) axle,
(5) spring,
(6) set screw,
(7) round nut,
(8) collar,
(9) base,
(A) chamber,
(B) chamber,
(E) nut,
(K) slide,
(M) magnet,
(P) extension of the axle,
(R) gun-barrel,
(S) point on the cylinder,
(T) flange,
(Y) diaphragm.

Brief presentation of figures -1- and -2- of the suggestive solution.

In figure -1- is presented the arrangement of the absorption – reduction mechanism which is consisted of the cylinder (1), exteriorly of which, the spring (5) is positioned. The cylinder (1) is divided, by one diaphragm (Y), in two chambers, the chamber (A) and the chamber (B) and in which chambers, the axle (4) is inserted. In chamber (A) is inserted the spring (2) and in chamber (B) is inserted the spring (3). The transversal set screw (6) locks the chamber (B) and the round nut (7), locks the axle (4). The round nut (7) is screwed on the right edge of the axle (4). The right edge of the axle (4) abuts on the still frame of gun and by extension it abuts on the gun's handgrip. The extension (P) of the axle (4) penetrates the transversal set screw (6) and forms part or the base for the support of the magnet (M), which magnet (M) is locked by the nut (E) and of which magnet (M) the magnetic lines attract the slide (K) and the cylinder (1). In figure -2- the Magnet (M) is supported on the base (9), while the extension (P) of the axle (4) is subtracted.

DETAILED DESCRIPTION OF THE INVENTION

Figure -1- arrangement analysis.

The big exterior diameter of the cylinder (1) is coming through the spring (5) of which the right edge abuts on the flange (T) of the cylinder (1) which is configured in a bigger diameter, and the left edge of which spring (5) abuts on the gun's slide (K). The axle (4) bears the round nut (7) and is formed to the collar (8), which round nut (7) and collar (8), immobilize the axle (4) and meanwhile they function as the points of reference of the springs.

The spring (2), entering chamber (A), by the left edge abuts on the diaphragm (Y) and by the right edge abuts on the round nut (7) which is screwed on the axle (4).

When the springs (5) and (2) are installed in the slide (K) they have the minimum compression. The spring (3) is positioned in chamber (B) and is locked by the set screw (6), but since the length of the spring (3) is shorter than chamber's (B) length, the two edges of the spring (3) are in a distance, on the one hand, from the set screw's (6) surface, and on the other hand, from the collar's (8) surface.

The system's function upon firing.

A flash before the firing, the spring (2) and the spring (5) have the minimum compression while the spring (3), which is positioned in the chamber (B), is under zero compression. The front surface of the slide (K) under the gun-barrel muzzle and the front surface of the cylinder (1) adjoin the magnet (M).

Upon firing the gases' pressure touches the point, which is critical for the magnet's attraction on the slide (K). The slide (K) is violently set in motion, cuts the magnetic lines and starts to recoil and to compress the spring (5), which spring (5) presses the cylinder (1). The spring (2), and the magnet's (M) attraction, does not permit the cylinder (1) to drift immediately to recoil. Thereby the slide (K) continues its recoil until it hits the cylinder's point (S), which is shaped in a bigger diameter.

On point (S) of the cylinder (1), where the slide (K) hits the cylinder (1), any further spring's (5) compression is interrupted. As the gases continue to increase their pressure into the gun-barrel, they get the point which is critical for the magnet's (M) attraction on the cylinder (1). Hereat the continuous recoil of the slide (K) sets also the cylinder (1) to recoil, and keeps it away from the magnet (M).

Upon this phase, the slide (K), the spring (5), the cylinder (1) and the set screw (6), recoil as an assembly which compresses the spring (2). Since the axle (4) is not moving towards any direction and since the cylinder (1) recoils, compressing meanwhile the spring (2), the set screw (6), because of the fact that it is screwed in the cylinder (1), minimizes the space that has the spring (3) in the chamber (B) between the set screw (6) and the collar (8). Up to this moment, wherein the expansion takes place from the bullet's firing, and which expansion acts over the slide (K), only two springs function as a retroaction system, since they are positioned successively, to wit the spring (5) and the spring (2) function as one. Since the slide's (K) recoil is continued with the decelerated movement, therefore the movement of the cylinder (1) also, and while the spring (2) approaches the 3/5 of the completion of its compressing, then the spring (3) abuts on the set screw (6), and the collar (8). The decelerated movement of the slide (K) and of the cylinder (1) meets the spring (3) in total inertia, hence the spring (3) absorbs the most of the rest of the slide's (K) recoil energy, before the spring (3) enter to the absolute procedure of compressing.

The result is to be interrupted any further recoil of the slide (K) before it hit the frame and since the gases' expansion is completed, the cylinder (1) and the slide (K) begin

to move in opposite direction, with the maximum acceleration, with result to be improved the firing speed of the gun. This is caused of the spring's (3) inertia status, which spring (3) acts as an extra powerful suspension against the slide (K), with direction opposite of the slide's (K) recoil direction, hence minimizing the intensity and the duration of the recoil. The time lag, which is caused of the magnet's (M) presence, causes the gases' maximum expansion and gives bigger initial speed to the bullet, with the consequence of the bullet's firing range increase. The spring (3) has also positive effect to the slide's (K) axial drifts, since the slide's (K) time of roll back to the initial position is faster. Beyond the magnet's (M) pre-mentioned support method, by the axle's (4) extension (P), another magnet's support method is by the use of a base, like the base (9) of figure -2-. In this case the base (9) is locked on the frame of the gun so as to be immovable and on which base (9) the magnet (M) is positioned and attracts the cylinder (1) and the slide (K). In this case, the extension (P) of axle (4) doesn't need to be extended to the magnet (M), as this is depicted in figure -2-.

The system may function also without a magnet, by using only the mechanical parts, but in this case the bullet-will not have longer firing range.

Sine the invention being expanded beyond its limits, but by the proper forming of the invention's main parts, like the cylinder's and axle's shape, the springs' resistance force and dimensions, while the spring (3) maintains the specifications of its freedom degree, the system will be possible to fit to any gun type.